

Sertularia pumila Linné. Ver., Inv. V. S., p. 732, 1874.

Very common, and growing principally on fucus, on piles of wharves; also on floating fucus in the harbor. A very robust variety was collected from fucus stranded on the outer beach at Race Point.

**DESCRIPTION OF A NEW SPECIES OF RAY (*RAIA STELLULATA*)
FROM MONTEREY, CALIFORNIA.**

By DAVID S. JORDAN and CHARLES H. GILBERT.

Raia stellulata sp. nov.

Allied to *Raia radula* Delaroche. Disk much broader than long, anteriorly broadly arched, and convex, the tip of the snout very slightly exerted. Anterior margin of pectorals undulated, convex anteriorly, then concave. Length of snout from eyes a little more than twice the width of the interocular space, which is concave, less than the distance between the outer angles of the spiracles. Breadth of disk equal to the distance from the tip of the tail to the shoulder-girdle. Length of tail equal to the distance from its root to the middle of the interocular area.

Male everywhere above rough with stellate prickles, the base of the pectorals being almost smooth. Along the middle region of the back and the whole upper surface of the tail is a band of close-set, rather low prickles, with broad, very distinctly stellate bases. An elongate patch of stout, recurved spines on the anterior part of the pectorals, and farther back the usual series of claw-like spines found in the males of all species. Stout spines above the eye, a few in the middle of the shoulder, and along the middle line of the tail. Sides of the tail without large prickles. Lower side smooth, except around the mouth.

Female everywhere above rough with stellate prickles, the anterior region, middle of back, and upper surface of tail most so. A median row of strong spines on the tail above, and six on the scapular region. A series of strong spines over the eye. A lateral row of rather strong prickles on the tail. Body smooth below, except anteriorly.

Tail flat below, with a conspicuous lateral fold. Dorsal fins low, their height equal to the interorbital space, separated by a space considerably shorter than their base. Caudal fin reduced to a very small fold, as in the "genus" *Uraptera*, to which this species would be referred in Müller & Henle's arrangement.

Mouth somewhat arched. Teeth not very sharp, tricuspid, about $\frac{35 \text{ to } 40}{35}$. Nasal flaps slightly fringed externally. Distance between nostrils about equal to the distance from them to the tip of the snout.

Color grayish-brown, everywhere mottled with light and dark colors, the markings sharp and distinct. Numerous black spots of all sizes, some of them ocellated. A black spot about as large as the eye at the

base of each pectoral, each surrounded by a pale ring and in turn by another dark one. Head with black cross-bars. The two sexes entirely similar in color.

This species is not uncommon in the Bay of Monterey. We have obtained eight examples, which agree with each other very closely. One of these is a female, about 18 inches in length, in which the ovaries are immature. The other females are about 30 inches in length, and the ovaries are fully matured, containing eggs. The males are about 30 inches long, likewise bearing evidences of maturity. These specimens are now in the United States National Museum. This species is readily distinguished from the two others known from the Pacific coast by its obtuse snout and its rough skin.

The *Raia binoculata* Girard is the common skate of the Pacific coast, and is brought in in large numbers to the San Francisco markets. In color it is uniform light brown, with a black ring near the base of each pectoral, and usually a dusky crescent on each ventral. The pectoral ocellus is often obscure, and sometimes can hardly be traced in preserved examples; in living specimens it is generally conspicuous.

The skin in the male is entirely smooth above, except the anterior edge of the pectorals, the bony part of the snout, and the larger spines on the front part of the pectorals, the supraocular region, a few (one to six) on the scapular region, and a series along the median line of the tail. There are two or three detached spines usually along the side of the tail. The claw-like pectoral spines are also present. The females have, in addition, a lateral series of spines on the tail and some prickles on the posterior part of the pectorals, the larger spines found on the pectorals of the male being wanting. The actual length of the snout in *R. binoculata* is not much greater than in *R. stellulata*, but its form is different, the disk being anteriorly acuminate, bounded by concave lines, its length being more than three times the interocular space. Male and female examples of this species, with ripe eggs, or well-developed claspers, are about two feet long.

Still another ray is known to us from a female example from Monterey about 30 inches in length. It agrees with *R. binoculata* in every respect, except in the form of the snout, which is extremely long, acuminate, and pointed, its length nearly four times the interorbital width. The anterior outline of the disk on each side of the snout forms a nearly uniform concave curve, it being scarcely at all undulated. These differences are shown by the appended table of measurements. We consider this at present a variety of *Raia binoculata*, although such variations in the length of the snout are unusual in the same species.

Still another form is known to us from two examples, a male and a female, each about 6 feet in length, taken at Monterey. This form must be considered as the *Raia cooperi* Girard, as the very imperfect description of the latter species agrees in all essential respects with these specimens.

Raia cooperi has the snout acutely produced, rather more so than in *R. binoculata*, though less than in the variety referred to, the distance from the eye to the tip of the snout being about twice the interorbital width. The length of the disk is $\frac{7}{8}$ its width; the tail is $\frac{2}{3}$ the length of the disk. The female is covered above with small stellate prickles, which are larger over the eye, on posterior edge of pectorals, on ventrals, the middle line of the back, and on the tail. Prickles on tail in several series. Differentiated spines present only over eye and on tail. The male is nearly smooth, its spines essentially as in *R. binoculata*. Color brown, with paler blotches; a large, obscure, blackish blotch at base of pectoral. This species has scarcely a trace of caudal fin, and is therefore likewise an "*Uraptera*." Its teeth are about $\frac{44}{40}$.

Whether this *Raia cooperi* is a distinct species or merely very old individuals of *Raia binoculata* we are now unable to decide. There are no important differences, except such as might accompany increased age.

Table of measurements.

	<i>Raia stellulata</i> . ♀	<i>Raia binoculata</i> . ♂	<i>Raia binoculata</i> var. ? ♀
Extreme length, in inches.....	17.45	21.6	28.8
Length of disk, in inches.....	10.10	13.00	18.4
Disk:			
Greatest width (hundredths of length of disk).....	121	106	103
Greatest width at front of eyes.....	58	45.5	41
Width of snout, midway between eyes and tip of snout.....	41	16.7	14
Distance from snout to first gill-opening.....	43	50.5	-----
Distance between first gill-openings.....	31.5	25.5	-----
Distance between last gill-openings.....	18	14.3	-----
Distance from first to last gill-openings.....	14	12.8	12
Width of mouth.....	18	15	15.5
Width of interorbital space.....	8	7	8
Distance from snout to mouth.....	24	21.5	30
Diameter of orbit.....	8	6.2	5.5
Tail:			
Length.....	71.5	67	57
Distance between dorsals.....	5	3.8	3
Height of first dorsal.....	8	8	-----
Length of base of first dorsal.....	7.5	7.6	7

MONTEREY, CAL., April 7, 1880.

DESCRIPTIONS OF NEW SPECIES OF XIPHISTER AND APODICTHYS, FROM MONTEREY, CALIFORNIA.

By DAVID S. JORDAN and CHARLES H. GILBERT.

1. *Xiphister chirus* sp. nov.

Body elongate, somewhat compressed, formed as in *Xiphister mucosus* (*Xiphidion mucosum* Girard). Head short, convex in profile, not depressed above the eyes. Mouth small, oblique, the maxillary extending to opposite middle of pupil. Eye small, as long as snout, about 5 in head. Lower jaw slightly projecting. Teeth strong, the anterior canine-like, bluntish; four canines in lower jaw, *six or more in the upper*, similar